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ABSTRACT

This monograph represents the outcome of a two-day workshop on Career Education Curriculum Development held on the campus of Des Moines Area Community College (Iowa) in 1976. The first section, by Joseph A. Borgen, presents specific ideas about leadership roles and techniques for career education curriculum development. Included are discussions of effective leadership approaches, project management techniques, and career education development concepts. Step-by-step approaches are suggested for developing career education programs that have been successfully utilized by various community colleges. A selected bibliography is also attached to the first section. The second section of the paper, by Paul E. May and Tom Milam, provides a description of the Animal Health Technician program at Abraham Baldwin Agricultural College (Georgia), including a review of the development of the program and its current status. The third section, by D. Fred Landrum, contains a case study of the development of the Mining and Reclamation Technology program at Lees Junior College (Kentucky) and the program's course outline. (JDS)

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CAREER EDUCATION CURRICULUM DEVELOPMENT IN THE COMMUNITY COLLEGE

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FOREWORD

This monograph represents the outcome of a two-day workshop on Career Education Curriculum Development held on the campus of Des Moines Area Community College in the Spring of 1976. The workshop focused on the activities involved in the development of a cohesive program of curriculum development in the special area of career education. It provided some specific examples of planning, needs assessment, and curriculum development project management. There were opportunities for discussion, interaction and demonstrations of specific career technologies at the college. These are synthesized in the paper by Dr. Joseph Borgen. Two other presentations made at that time are included as Chapters II and III of this publication.

The purpose of this monograph is to present the concept of career education in the community college setting, demonstrate how one implements that concept, and present some specific examples of how it is working at some institutions. In this manner, other community colleges can profit from this experience.

Timothy F. Regan
AIDP Project Manager
McManis Associates, Inc.
March 1977

CHAPTER I

MANAGEMENT OF CAREER EDUCATION CURRICULUM DEVELOPMENT

Dr. Joseph A. Borgen
Des Moines Area Community College

I. MANAGEMENT OF CAREER EDUCATION CURRICULUM DEVELOPMENT

INTRODUCTION

This paper is an attempt to present specific ideas about leadership roles and techniques for career education curriculum development that may be useful to local community college leaders embarking on local projects. Three parts make up the paper: effective leadership approaches, project management techniques, and career curriculum development concepts. The intent herein is to describe effective leadership behavior in working with others to apply project management techniques for the execution of local career education curriculum development efforts. One could argue that without effective leadership major career education curriculum development efforts will probably fail.

The style and behavior of leaders in community college organizations has a direct effect on organizational climate, productivity and the level of employee satisfaction. Leadership behavior can be constructive or destructive as an influence in the accomplishment of projects including curriculum development efforts. Before focusing specifically on curriculum development efforts, it appears useful to describe effective leadership behavior.

Prior to World War II, leadership research focused on identifying traits and characteristics of effective leaders (Stogdill, 1948). Are effective leaders taller, smarter, better looking, better educated, more experienced, etc. than ineffective leaders? Jacobs (1971), Cribbin (1972), and many others agree that the trait studies failed to demonstrate unique leadership qualities or characteristics. Simply put, these studies demonstrated that successful leaders were successful and unsuccessful leaders were unsuccessful without finding the reasons.

Following World War II, research focused on behavior rather than traits and asked the general question: What does an effective leader do as he/she relates to followers? Effective leadership behavior can, based upon this post-war research, now be described and defined.

HOW IS LEADERSHIP DESCRIBED AND DEFINED?

Effective leadership behavior can be ***described*** in relationship to decision-making. As described by Schmidt (1966), decision-making can range from a leader-centered style through a group-centered style as follows:

- *Telling. The leader unilaterally identifies a problem, makes a decision, and tells subordinates what they are required to do.*

- *Persuading. The leader again unilaterally makes a decision and instead of telling, sets out to persuade the subordinates to accept the decision.*

- *Consulting. The leader, before he makes a decision, would discuss the problem with subordinates giving them a chance to influence the decision before the leader decides.*

- *Joining. The leader would work as a group member in identifying a problem and making the decision. The leader in this instance would agree before the group decision to carry out the group's determination.*

- *Delegating. The leader turns the decision-making totally over to the group of subordinates. He would agree to support and carry out their decision as long as the decision was related to the boundaries of the problem definition.*

The question remains, what is the most effective leadership style for decision-making? Many writers (Jacobs, 1971; Wenrich, 1971; Halpin, 1957; Kahn and Katz, 1960; Fiedler, 1967) would agree that no single style is appropriate and the most effective leader would be multistyled depending on the variations in the situation and the group.

The effective leader/decision-maker could select from the range of styles or behaviors based upon three force fields (Schmidt, 1966). First, there are ***forces in the situation*** such as the type of organization (age, purpose, size, past practice, etc.), pressures of time, pressures related to resources, and the context and nature of the problem itself. The second grouping includes ***forces within the leader*** himself, such as his confidence in the group, his own leadership inclinations, and his feeling of security in uncertain situations. Finally, there are ***forces in the group members*** such as readiness for responsibility, interests, knowledge and experience, understanding of goals, expectations about the leader, and the potential effect of the decision on the group members.

In addition to these forces, many other considerations probably should be taken into account by the leader as he selects from his choice of leadership styles. Schmidt suggests in choosing style, the leader should attempt to:

- *Raise the level of subordinate's motivation, teamwork, and morale.*

- *Improve the quality and acceptance of all decisions.*

- *Further the growth and individual development of all subordinates.*

In decision-making an effective leader would choose from a range of behaviors depending on the situation, the group, his competencies, and goals related to the motivation and growth of his subordinates.

Effective leadership, as defined in the literature, relates differently to the concepts (and contexts) of "Administration," "Management," "Power," and "Authority." As an

example, Wenrich (1971) suggests the "leadership function" and the "management function" make up the two component parts of administration. The leader functions via creative planning, living ahead of his institution, and conceiving and implementing strategies, while the manager functions to maintain day-to-day operational stability and efficiency.

Lilienthal (1967) suggests redefining the role of a manager from that of administrator, scientist, or technocrat to that of leader. In Lilienthal's view, management leadership requires a humanistic outlook rather than mere mastery of administrative techniques.

> Leadership is based on the capacity for understanding of individuals and their motivations, their fears, their hopes, what they love and what they hate, the ugly and the good side of human nature. It is an ability to move these individuals, to help them define their wants, to help them discover, step by step, how to achieve them . . . In short the full release of human energy is the central purpose and function of the manager . . .

In another perspective, leadership is contrasted with power and authority as a form of organizational control over members in an organization. Jacobs (1971) offers the following definitions:

> *Power* is the capacity of a superordinate to deprive a subordinate of organizational benefits or inflict punishment for not following orders or suggestions.
>
> *Authority* is accepted by subordinates because they recognize a decision or suggestion is legitimate and necessary for the organization.
>
> *Leadership*, in contrast, is characterized by the avoidance of confrontation, and is based upon superordinate skills that can move persons and groups toward objectives without interactions that make evident status and power differentials (between superordinate and group).

Jacobs (1971) contends that organizational control over members – a vital necessity for existence – can be accomplished via power, authority, leadership, or any combination thereof. The exercise of power is almost always resented (covertly, if not overtly), therefore, the effective superordinate probably balances the use of authority and leadership influences. Again, the balance between authority and leadership (from Jacobs' context) undoubtedly depends on forces in the situation, the group, and the superordinate himself.

Cribbin (1972) in his definition contrasts a ***manager*** who has power over subordinates with a ***leader*** who has influence with subordinates. The manager has organizational resources to require subordinate behavior while the leader relies on his personal resources and skills to sway subordinate behavior.

A commonly accepted definition of leadership does not come out of the literature. As Cribbin noted, definitions relate to "positions of leaderships," "kind of behavior," "characteristics of a person," or any combination thereof. Granting that no common definition exists, it appears that many writers would agree that a leader with situational

sensitivity, group sensitivity, and unique leadership behaviors can serve a special function in promoting organizational goals along with the maintenance and growth of his group members.

WHAT UNIQUE LEADERSHIP BEHAVIORS HAVE BEEN IDENTIFIED AS CONTRIBUTING TO EFFECTIVE LEADERSHIP?

Variables and factors identified in the literature (Halpin and Winer, 1957; Cartwright and Zander, 1960; Halpin, 1957; Hemphill, 1955; Fiedler, 1967, 1970; Kahn and Katz, 1960; Blake and Mouton, 1964) that describe effective leadership behavior, appear to show a distinct pattern, i.e., that an effective leader must balance the concern for achieving organizational objectives and providing structure, with a concern for the aspirations, needs, and attributes of people in the organization. As presented earlier, the specific balance and emphasis between the variables depends on the nature of the situation, the group, and the leader himself. The two groups of unique behaviors, concern for mission and concern for people, appear to be well-established as those exhibited by effective leaders in a wide variety of situations.

Specifically applied to curriculum development efforts, effective leadership would involve organizing and structuring the objectives and activities of this project. These "structuring" behaviors, to be effective, must be executed working with the people involved, being considerate of their wishes, desires, needs, and aspirations.

PROJECT MANAGEMENT

Recognizing the importance of initiating structure as a leadership role, the concept of project management is offered as an approach useful to the curriculum development leader. Project management consists of problem solving, planning, development, and evaluation activities that are within a defined time frame with specific terminal objectives. Projects then are usually one-time, nonrecurring efforts with a specific beginning date and ending date. Usually the project is a special effort by a group of people to accomplish a specific objective which, when achieved, will not need to be redone immediately. Examples of specific project titles may be: Determining the Feasibility of a New Career Program; Preparing for a Regional Accreditation Visit; and Preparing Educational Specifications for a New Facility. Examples of nonprojects would be supervising the departmental budget and preparing monthly expense reports. Nonprojects are usually ongoing routine duties where projects are special, well-defined, one-time efforts. Most career education curriculum development efforts could be defined as projects and could be planned and executed by a leader using project management techniques.

Project management involves organizational efforts whose accomplishment usually requires a great amount of participation from a group of individuals who must work together (Cleland, 1969). This is to say that many curriculum projects in community colleges involve more than one individual and usually a group or team.

In project management, team management processes for objective setting, problem solving, and decision-making are most often superior to individual determinations.

Project management as applied to career education curriculum development projects can involve five action steps initiated by the *project leader* working with a project team.

STEP 1 *Define the Project Objective(s) and Project Scope.* This step involves defining the measurable objectives that describe the sought for outcome. This objective should state the outcome, the conditions under which the outcome would be achieved, together with a criteria or measure of results. This project definition should include a time frame within which the project and objective(s) are to be completed. For example, the objective may be to prepare a detailed written plan for the decision of a career placement center to serve students graduating and withdrawing from all programs of the community college. The time line for completion of the project, together with the use of the project's product, would be used as additions to the project definition.

STEP 2 *Identify the Project Team.* The project leader, with the project definition in hand, should select the persons to make up the project team. In making the team selection, consideration of the following factors is suggested:

- *The relationship of a person's normal responsibilities to the project effort is defined in Step 1.*
- *An individual's past experience in working with similar projects in the past.*
- *Individuals likely to be affected by the execution or outcome of the project.*
- *A workable size team of about 5-10 persons in total.*

STEP 3 *Complete a Work Breakdown.* The work breakdown is the analytical team process of defining the activities or tasks, in a logical sequence, that are needed in the opinion of the team to accomplish the project objective(s).

STEP 4 *Sequence Work Activities, or Build a Network.* Sequencing the work activities is the process of determining the interrelationship and order of work to rationally accomplish the project objective. Techniques for networking such as PERT may be useful.

STEP 5 *Coordinate, Monitor, and Control the Work Plan.* Once the plan has been completed, the project team and the leader need to establish communication patterns to work the plan and make "mid-course" adjustments to the plan as may be needed.

Effective leadership behavior and decision-making using some form of project management can be instrumental in the development of a career education curriculum. The following ideas about career education curriculum development are intended to provide leaders with a framework for considering the development of a plan.

CAREER EDUCATION CURRICULUM DEVELOPMENT

CAREER EDUCATION DEFINED

Career education is defined in about as many ways as there are authors in the field. However, several well accepted definitions are here offered. Hoyt (1972) defines career education as ". . . the total effort of public education and the community aimed at helping all individuals to become familiar with the values of a work-oriented society, to integrate these values into their personal value systems, and to implement these values into their lives in such a way that work becomes possible, meaningful, satisfying to each individual." To Evans (1972), "career education is the total effort of the community to develop a personally satisfying succession of opportunities for service through work, paid or unpaid, extending throughout life." Bailey and Stadt (1973) define career education programs as those experiences ". . . designed to help individuals become oriented to, select, prepare for, enter, become established, and advance in an individually satisfying and productive career."

The literature contains many models for career education. A common sequence of career education stages include an awareness and orientation stage in the elementary grades, an exploration stage in the middle and high school grades, and the preparation stages in high school grades and higher education. These models are most often represented in a linear progression starting in elementary school and progressing through vocational or higher education. A more realistic scheme appears to be a cyclical arrangement of career education stages not specifically tied to "years in school" or a person's age. To illustrate, a person may have started on one career which makes him or her aware of other career possibilities he or she may wish to explore and eventually prepare for. Indeed, the cycle *may* happen several times in some individual's lives. To limit the stages of career education to one set of grades and one set of ages appears to be reductionistic and not consistent with the nature of some community college students.

Figure One, the Cyclical Career Education Model, graphically represents the idea that individuals can probably enter the cycle at any point and progress directly or shortcut around the cycle once or a number of times. This scheme supports the common notion that people change their career on the average of four to five times in a lifetime.

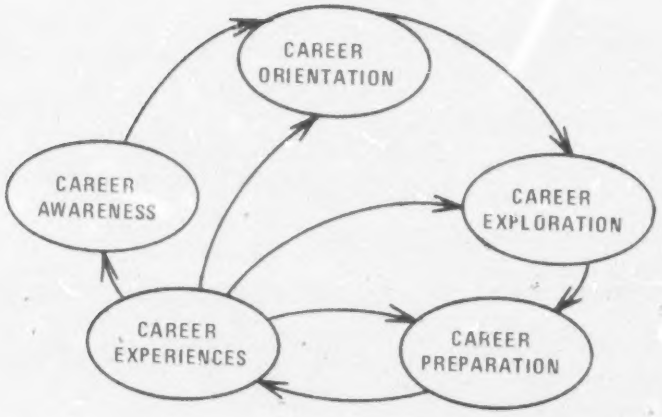

FIGURE ONE
Cyclical Career Education Model

THE COMMUNITY COLLEGE CAREER EDUCATION CURRICULUM

The term curriculum used herein is defined as a formal, professionally planned set of experiences for students designed to enhance and promote the planning of and preparation for internally satisfying careers.

Three foci for needs assessment are suggested as contexts for this career curriculum planning:

ONE: The nature of potential and incumbent students including their interests, abilities, attitudes, motivations, and past educational/employment experiences.

TWO: The present and future needs of various employer groups in business, industry, health, agriculture, public service, etc. for trained and educated employees.

THREE: The needs of a democratic society for individuals who are politically, economically and socially literate, thus possessing life skills sufficient to be contributing members of the society.

The community college career education curriculum can be structured to include five major components: career exploration, career counseling, career preparation, career placement, and career supplemental. One view of these components or programs in the community college setting is described below as a "practical" and "real" interpretation of the cyclical career education model shown earlier in Figure One.

Career Exploration. Career exploration is the process by which a student samples, considers, inquires, searches, and discovers the nature, requirements, and needed preparation for various careers. It appears that career exploration for community college students can be formalized in using various program strategies.

One strategy is the special planned emphasis in community college course offerings focusing on the career aspects and relevancy of the specific course to the world of work. This emphasis should be to careers for which the college has preparatory programs as well as other careers where preparation is achieved elsewhere. It appears that almost any course a community college offers has direct or indirect relevancy to some career.

A second strategy is the course or program offering with the specific objective of offering students "hands on" or "vicarious" career exploration experiences. This strategy can take the form of work samples provided in a "laboratory" or career exploration center for students to "try" and "consider." This strategy may also take the form of a "career planning" course (or mini-course) featuring field trips, special speakers, opportunities to interview people in careers appealing to students, and study of career exploration techniques and criteria students could adopt. This strategy may include using seminar and group techniques which offer community college students the opportunity to share among themselves experiences they may have had with full and part-time employment.

A third strategy may be planned opportunities for students through work study employment, part-time employment, or cooperative work experiences to explore careers that appear attractive to students.

The impetus for planned career exploration experience is to provide students with an improved framework within which to make decisions about career preparation and career selection. To be effective in serving students one could argue that planned career exploration experiences are superior to random experiences or trial and error.

Career Counseling. Career counseling is the professional process of helping students to understand their own interest, abilities, and attitudes; explore, consider, and plan for possible careers; understand and consider educational and experiential requirements of various careers; and to structure means to reach the student selected career end(s). Career counseling programs often include such functions as admissions counseling, orientation, educational program advisement, and counseling assistance with some of the personal/academic problems that students encounter. The key feature of a career counseling program is program structure and staff competence to deal meaningfully with the variables in people (such as age, sex, values, attitudes, motivations, interests, previous experiences, and cultural factors) important to their vocational development. The program then, to be meaningful, must be executed in the ever-changing context of employment realities and requirements in a dynamic economy.

Career Preparation. Career preparation programs usually are planned instructional programs intended to develop the competence in students that approximate the competence required by employers for job entry, performance, and advancement. Competencies in many career preparation programs include skills, knowledge, attitudes, and perceptions necessary for "career success," together with life and community "survival" skills. Career preparation programs at community colleges are often designated as vocational, technical, or occupational programs designed to prepare for skilled, technical, and paraprofessional

occupations. To be fully accurate, career preparation programs should also include preparation for professional occupations via baccalaureate and graduate programs to which community college students may transfer. Indeed, as implied earlier, career exploration and counseling programs should include "content" about all careers whether or not that preparation is available at a given community college.

Career Placement. Career placement is the service which assists students in relating their personal characteristics, educational background, and employment experiences to occupational requirements; assisting them in their search for employment while simultaneously cooperating with employers to foster successful induction of students into employment. Career placement services usually take one or a combination of three forms: (1) a formally structured placement office staffed to provide direct service to students by acting as a facilitator between interested students and employers; (2) placement services provided more informally by teachers, leaders, and advisory committee members affiliated with specific career programs, who because of their relationships with prospective employers and interest in students, can provide significant placement assistance; and 3) the career planning services offered in some career counseling programs focus on specific "job finding skills" and techniques for students to implement at any time in their lives.

Career Supplemental. Career supplemental program offerings are designed as career intensive continuing education experiences for individuals who are generally employed and interested in upgrading their competencies for purposes of career continuation, advancement, or change to another role. Often the setting, objectives, sponsorship, and nature of students in career supplemental programs are different than with career preparation programs. The setting for these programs may be the college site, an industry site, a business site, or any other community location convenient for students. Often career supplemental offerings are at late afternoon and evening hours. Therefore, many settings other than the community college are available and, in some instances, desirable. Objectives for career supplemental are usually less comprehensive than for preparation programs, but should recognize the needed career competencies and the specific nature of the students. Career supplemental offerings are often specifically designed for and sponsored by single employers or associations of employers. The key ingredient of a career supplemental program is program structure and staff competence that can quickly and meaningfully respond to the contemporary needs of employers and students (employees) with quality instructional services.

PLANNING THE COMMUNITY COLLEGE CAREER EDUCATION CURRICULUM

Planning and decision-making related to a community college career education curriculum is complex and will vary from situation to situation. To offer a specific plan applicable to all community colleges is impossible. However, a series of suggestions for planners to consider may be useful. It appears that several ingredients may facilitate the planning process:

- *A statement of the college's philosophy of career education describing its meaning, scope, purpose, and the general services to be provided to students. The ideas discussed earlier in this paper may be useful in structuring such a statement.*

- *Professional staff capabilities competent and committed to leading the planning and implementation of a career education curriculum. Such in-house staff may need to be supplemented with consultative assistance from other competent and experienced community college career educators.*

- *A planned effort to obtain and analyze data and information about careers and the nature of potential students. Such activities are discussed in the last section of this paper.*

- *A formal written and practical plan of action describing the process and the involvement of people in planning and implementing a segment of a comprehensive career education program. It is suggested that the involvement of the following kinds of individuals be considered: administrative leader(s), professional instructional student services staff, career educators, existing/potential students, and representative community employers.*

NEEDS ASSESSMENT ACTIVITIES

The planning of community college career education programs can be improved, with chances of success enhanced, if an accurate and comprehensive needs assessment is executed. The scope, nature, and depth of that assessment will obviously depend on the specific situation. The purpose of needs assessment should be to obtain that data and information needed to make good curriculum decisions based upon the assumption that rational decisions can be improved with better and more complete information. Following are described some needs assessment activities used by community colleges and applicable to planning career education curricula.

- *Obtaining Program Suggestions.* The purpose of these activities is to gather suggestions from the community, from students, and from members of the college with regard to specific kinds of program services for the career education curriculum. Specific data gathering could be obtaining opinions and judgments from existing students, from students who have withdrawn or dropped out, and from students who have successfully completed the present programs of the institution to determine what suggestions they would have for the development of a career education curriculum. Further program suggestions may be acquired via a survey from community groups and any advisory committees that may be operating at the present time. It appears also that an excellent source of information for career education curriculum planning may be studies and investigations done by other community groups, both public and private, who have looked at demographic, economic, and

sociological data about the community. The purpose of all these suggested techniques is to uncover the interests and ideas that people within and outside the institution may have that would relate to the components and content of the career education curriculum. This is not to say that every suggestion or idea can or should be integrated into the program, but that the gathering of opinions from a wide variety of individuals and organizations considered in composite could probably give useful input into program planning.

- *Assess Employment Opportunities.* Techniques that may be useful to uncover employment opportunities for individuals who enroll in the community college may include the monitoring of press, governmental, and private listings of employment opportunities as expressed in a number of documents that may be available to the institution. Further, comprehensive manpower supply and demand surveys in the community by the college may serve to uncover future job needs, together with what other organizations and institutions in the community are doing to serve those needs. There are, of course, other sources for obtaining similar kinds of information other than surveys, including information from the Bureau of Labor Statistics, State Employment Agencies, national and local planning associations, the Occupational Outlook Handbook, the Occupational Outlook Quarterly, Tomorrow's Manpower Needs, Manpower Report of the President, etc. Information about employment opportunities can be useful in planning and as content for career exploration and career counseling.

- *Assessment of Student and Community Interests.* Specific techniques for gathering information in regard to this activity may be student interest inventories conducted among potential student groups or total community interest surveys done using scientific survey research techniques.

- *Assess Characteristics and Competencies of Potential Students.* The purpose of these techniques is to develop a complete description of the characteristics and competencies of potential students to be served by career education services. This kind of information will assist later in the development of realistic program objectives and methods to meet the needs of students. Specific dimensions of the nature of potential students that may be considered are the physical characteristics; past education and employment experiences; the level of motivation and interest; and the attitudes, biases, and prejudices of potential students, including their ethnic backgrounds, family backgrounds, and attitudes toward work, education, etc. Such information may be gathered from interest, attitudinal, or aptitude inventories, or from the literature which describes the characteristics of target groups similar to those your college may be considering. Finally, the college may choose to consult with persons who are knowledgeable about, or representative of, the potential student group the program may be intended

to serve. The primary purpose of this activity and these techniques is to get as complete a picture as possible of the nature of potential students so that programs later can be designed to meet their needs.

- *Identify Career Competencies.* The commonly accepted goal of career curricula is to insure that upon completion of a full range of services the graduate will be ready for employment. Career readiness implies that the graduate of a program will have a repertoire of competencies that match job entrance and advancement requirements. The purpose of competency identification then is to identify the specific tasks, skills, behaviors, and job entrance requirements that are needed by individuals to successfully enter employment. These job competencies then can be the basis for structured program planning and for other facets of the career education curriculum. Job competencies are most expeditiously obtained through the use of advisory committees composed of selected community employers and employees.

- *Identifying Job Specifications.* Information about job requirements, duties and responsibilities, pay rates, entrance requirements, and job environment conditions for a wide variety of careers may be useful in planning purposes. Further, specific attributes of the employment setting and the rewards of certain careers are important information to have as content for various facets of the career education curriculum such as career exploration and career counseling.

The activities described above may be useful to planners of career education curriculum in the community college. The listing is not intended to be inclusive of all needs assessment activities that are needed or could be useful in planning comprehensive career education curriculum. There are, however, examples of techniques that individuals could use in an attempt to make the program offerings career relevant and consistent with the needs of potential students. Further information about general models for needs assessment are described in Steele (1973). Specific step-by-step procedures with sample instruments for needs assessment and program development related to career programs are contained in Borgen and Davis (1974).

SUMMARY

The effective planning of career education curricula is a project requiring competent leadership and rational planning techniques. This paper attempted to describe effective leadership behavior and project management techniques that have been used successfully by others. One view of the component parts of a community college career education curriculum was offered for planners to consider and reflect on in the process of planning. The writer of this paper would welcome feedback from practitioners in career program planning about the ideas discussed herein.

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CHAPTER II

CAREERS IN ANIMAL HEALTH TECHNOLOGY

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II. CAREERS IN ANIMAL HEALTH TECHNOLOGY

In the past, practicing veterinarians have worked without the aid of highly trained assistants. But about 15 years ago, the idea of training paraveterinary personnel developed, and schools throughout the country began initiating programs for veterinary assistants.

Routine laboratory work, radiographing, and patient monitoring can now be done by someone trained to do these particular tasks. We are all accustomed to this type of assistance in human medicine. Nurses and physicians' assistants already perform similar routine work for people, and we readily accept it. Now veterinarians have some help – animal health technicians (AHT's).

What does this mean to the practicing veterinarian? It means better health care for our animals. The practitioner can focus more attention on duties that demand his expertise.

Today there are more than 50 schools training veterinary assistants in the U.S.A., variously using one-year, two-year, and four-year programs to achieve the desired result. The most popular and perhaps the most successful method utilizes the two-year concept. The terms animal health technician and animal technician are accepted nomenclature for two-year programs.

The College of Veterinary Medicine – University of Georgia at Athens (C.V.M.) began studying a two-year program in 1969, and the faculty was in favor of initiating AHT training at the time; however, the administration could not overcome certain problems. Also, the University of Georgia could not give a two-year degree in AHT because of its university status. After much deliberation, the idea was put aside as unfeasible.

The pressures were still there for animal health technicians. A shortage of veterinarians existed in many areas of the state.[1]

According to a survey conducted by the C.V.M.,[2] diagnostic work, which requires DVM training, took up only 20% of most veterinarians' workdays. Treatment, which often amounts to routine work not requiring DVM training, took up a full 60% of workdays.[3] The remaining 20% of workdays was occupied with administrative work.

It would be concluded then that veterinarians might devote more time to professional tasks requiring their expertise by allowing AHT's to assume less demanding responsibilities. Once a doctor diagnosed and prescribed treatment, an AHT could largely administer care to the patient.

The Georgia Veterinary Medical Association strongly supported the AHT concept, and additional support came from the Georgia Cattleman's Association and the state

legislature. At the time though, no school in the university system was as well equipped to offer the program as was the C.V.M.

The AHT program idea lay dormant for several years until the fall of 1973. Abraham Baldwin Agricultural College (ABAC) had the opportunity to apply for funding of several different new programs under the Advanced Institutional Development Program, Title III, from the U.S. Office of Education. Training para-veterinary personnel interested the ABAC Division of Science and Mathematics faculty.

The head of the biology section and the division chairman met with the Associate Dean C.V.M. in Macon, Georgia and formulated the idea of ABAC-C.V.M.'s animal health technician program.[4] ABAC would offer a two-year training program for AHT's with the C.V.M. cooperating primarily through instruction at the teaching hospital in Athens.

A curriculum was developed with the help of the C.V.M. The idea of a junior college and a university cooperating in the training of AHT's was presented to the state board of regents for approval. The regents granted approval in December 1973 for ABAC and the C.V.M. to develop a program along the lines already discussed.

During the ensuing months, the relevant institutions took steps to get the program off to a good start.

- The C.V.M. brought in a consultant from Central Carolina Institute of Technology to help initiate the program.
- An Advisory Committee for the Animal Technician Program at ABAC and the C.V.M. was organized with academic personnel from both schools – including two practicing veterinarians from Georgia Veterinary Medical Association and one graduate animal health technician.
- The Veterinary Practice Act was changed to include animal health technicians.
- The state board of regents granted ABAC $50,000 for some of the program's beginning costs.
- The state board of regents granted ABAC two faculty positions for instruction in the AHT program.
- The C.V.M. applied for and received a $200,000 Federal grant for a portion of the training cost for two years.
- ABAC applied for and received tentative approval by the U.S. Office of Education for $250,000 over three years for the AHT program.

Upon the recommendation of the C.V.M. and the Georgia Veterinary Medical Association, a veterinarian with a practice background was selected as program director. All concerned parties desired the technician training to be practice oriented for both large and small animals.

By July 1974, when the new director arrived at ABAC to begin work, all these actions had given the AHT concept a very strong base.

Because of limited space at the C.V.M., it was decided to limit enrollment. ABAC had experience with a two-year registered nurse program and utilized this experience when establishing the selection criteria for students.

Admission to the Animal Technician Program is restricted to 40 students selected by the Animal Technician Admission Committee. Students are admitted only in September of each year.

Minimum requirements for consideration of an applicant are as follows:[5]

- A minimum predicted freshman average grade of 2.0 as calculated by ABAC's admission office; or a 2.0 grade point average in all previous college work.
- A handwritten autobiographical summary, including experiences which the applicant feels cause him to desire a career in animal health, submitted with application.
- A strong background in the natural and biological sciences and mathematics.
- Evidence of good physical and mental health.
- A personal interview for admission conducted by the Animal Technician Admissions Committee.

Applicants to the Animal Technician Program must be admitted to Abraham Baldwin Agricultural College, but admission to ABAC carries no implication of admission to the program. ABAC operates under an open admissions policy.

The first year approximately 45 applications were received, and a class of 25 students was selected to begin training in September 1974, just one year after the animal health technician concept was developed. The class was composed of 21 females and four males.

During the planning period it became obvious that the changing direction of the program both at ABAC and the C.V.M. called for a revised curriculum. The director of the program met with representatives of ABAC and the C.V.M. to study changes. The faculty of the

C.V.M. desired to have each AHT student for approximately six months and to have AHT students working in the teaching hospital throughout the year. There was also strong support for externship and cooperative work experience (CWE) with a practicing veterinarian.

The curriculum subsequently developed called for seven quarters of training divided in the following manner:

- *Four quarters at ABAC.*
- *Two quarters at the C.V.M.*
- *One quarter at CWE.*

Therefore, to meet requirements and maintain steady enrollment at both institutions, the class divides into two groups beginning with the fourth quarter of training. The first three quarters at ABAC prepare students for cooperative work experience as well as the C.V.M.

The following chart shows how the two groups of students alternate:

Quarter	1	2	3	4	5	6	7
Group A	ABAC	ABAC	ABAC	C.V.M.	C.V.M.	CWE	ABAC
Group B	ABAC	ABAC	ABAC	CWE	ABAC	C.V.M.	C.V.M.

Course work at ABAC is very intense, particularly for the first three quarters. Students carry from 16-23 quarter hours per quarter while in the program. Approximately 35 hours of the 125 hour program are general studies courses in English, history, political science, physical science, mathematics, and psychology. These courses meet the state requirements for history and government and prepare the student to take the Regent's Exam, an English exam required for graduation from any program offered in the university system.

Courses in the AHT curriculum are designed to give the student a wide diversity of training in surgery, radiology, laboratory procedures, and patient care. The first three quarters of didactic and laboratory work prepare the AHT student for the rotation at the veterinary college or with a veterinarian on an externship (CWE).

Because of the tremendous body of knowledge and the diversity of skills necessary to work in the veterinary profession, as little repetition as possible in training is desirable. Therefore, ABAC and C.V.M. agreed to stress different aspects of veterinary medicine. While there is some overlapping in the training, it is kept to a minimum.

ABAC	C.V.M.
1. Small animal surgical assistance.	1. Equine medicine and surgery.
2. Clinical laboratory skills.	2. Practical radiology.
3. Bovine medicine and surgery.	3. Small animal medicine.
4. Didactic and basic laboratory skills.	4. Anesthesiology.

It is felt by all connected with the training that animal health technology is a skilled profession. Therefore, the curriculum was designed with a maximum of practical experience. The seven quarters of the program include 1,400 hours of practical training.

Laboratory assignments at ABAC cover a wide range of activities because of the variety of tasks that a technician can perform in veterinary practice. AHT students spend many hours dissecting small animals. This enables AHT students to be better assistants in radiology, surgery, and patient care.

Surgical assistance and anesthesia training are important parts of the AHT training. Many hours are spent in laboratories assisting a veterinary surgeon with surgery and anesthesia. Close attention is paid to monitoring techniques, and vital signs on the patient are taken frequently. The student uses an esophageal stethoscope to monitor heart rate and respiratory rate throughout the surgical procedure. Evaluation of cardiac function can be done periodically by evaluation of the pulse and capillary refill time.

Dental prophylaxis is an important part of total health care for pets. Ultrasonic scaling of the teeth is a task that AHT's learn to perform under the supervision of a veterinarian.

Counting and identifying blood cells is an everyday occurrence in a veterinary practice and for AHT students. To develop skill and confidence requires many hours of work by the student.

Working with large animals is also a vital part of ABAC's AHT training. For many students it is their first opportunity to work with horses, cattle, and pigs. By utilizing clinical cases from ABAC's animals, the students see and work with many different cases such as colic in horses or eye disease in cattle.

Part of the training at ABAC includes a rotation through the Tifton Diagnostic and Investigational Laboratory, a branch of the C.V.M. Here the students learn how to collect tissue specimens from a cadaver and properly pack and ship them to the laboratory for further tests.

Techniques in basic microbiology are taught at the laboratory. The student learns how to collect, culture, and stain microorganisms for microscopic examinations and identification.

The student becomes a member of a health care team while at the C.V.M. Each team is composed of the following:

- *Veterinary clinician;*
- *Veterinary student;*
- *Graduate AHT/R.N.; and*
- *Student AHT.*

The student is assigned specific responsibilities in patient care while on rotation through seven blocks of training at the C.V.M The following blocks are divided into three-week periods:

- *Small Animal Medicine I;*
- *Small Animal Medicine II;*
- *Small Animal Surgery;*
- *Anesthesia;*
- *Radiology/parasitology;*
- *Bovine medicine and surgery; and*
- *Equine medicine and surgery.*

One three-week period is left open for the student to specialize in a particular area at the end of his six-month period at the C.V.M.

While the student is in the teaching hospital instruction is done by the graduate AHT and/or registered nurse. The C.V.M. employes 13 technicians, all who are involved in the instruction program. Since ABAC sends approximately ten students for each rotation teacher/student ratios range from 1:1 to 2:1. This gives the AHT student much needed individual attention. ABAC has a 1:4 ratio under the most ideal circumstances.

The AHT students work closely with veterinary students and help each other learn. Since each veterinary student works with a technician throughout his clinical training, he probably will want one to help him in practice. This experience should increase the number of potential AHT employers as veterinary students earn their DVM's and go into practice.

The ABAC and C.V.M. faculties maintain a close working relationship. The director frequently visits the veterinary school to monitor students' progress. The veterinary staff at ABAC has a courtesy appointment to the veterinary college at the university.

The CWE or externship is a vital portion in the students' training. The AHT student has the opportunity during this period to see what veterinary medicine is like in a practice situation. Only in a practical training experience can the student AHT appreciate the pressures and problems of everyday veterinary practice.

While the student is on CWE, he submits reports to ABAC on his progress. Progress reports are also submitted by the veterinarian employer. If possible, an AHT faculty instructor visits the student while he is on the CWE program.

During the first two years the Animal Technician Admissions Committee selected 70 students for the program from 127 applicants. 99% of the students who met minimum requirements had the opportunity to participate in the program. Only 57 students chose to do so. Of the 57 students who entered the program, 68%, or 39, are still in the program. The following is a breakdown of the 15 students who left the program:

Reason for Leaving	No. of Students
Decided program was not for them	11
Dropped program before they failed out	2
Failed	2

Of the students who dropped out, 73% did not feel the program was appropriate for them. In order to discourage applicants who may be misinformed about animal health technology, we are implementing an intensive orientation session beginning with the September 1976 class. This allows applicants to be directed toward a course of study corresponding to their personal goals.

Even though the program has been in full operation only two years (we will graduate our first class in June), ABAC's AHT already represents a milestone for the State of Georgia. Thanks to the cooperation among ABAC, the C.V.M., and the Tifton Diagnostic and Investigational Laboratory, the state now offers a fully accredited Animal Health Technology Program with experience in both large and small animals.

The program offers to young men and women who are unable or do not desire to attend veterinary school a chance to contribute significantly to the animal health field and, at the same time, allows veterinary practitioners to improve the quality of their service.

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[1] Lester Crawford, Melvin Pond, and Paul E. May. An unpublished presentation to the Ventures in Veterinary Medical Education section of the American Association of Veterinary Medical Colleges Council of Educators. Dec. 1, 1975.

[2] Crawford, Pond, and May. "Practice Characteristics of Veterinarians in Florida, Georgia, and South Carolina," *Journal of the American Veterinary Medical Association*, 163, No. 4 (1973), 365-368.

[3] Ibid.

[4] Personal communication with Dr. Frank Thomas and Dr. George Powell of ABAC and Dr. Lester Crawford of C.V.M. supplied their information.

[5] See current ABAC General Catalog.

CHAPTER III

DEVELOPMENT OF SURFACE MINING AND RECLAMATION TECHNOLOGY

D. Fred Landrum
Lees College

III. DEVELOPMENT OF SURFACE MINING AND RECLAMATION TECHNOLOGY

Lees College, a junior college of about 300 students, was chartered in 1927. Like its more modern counterpart the community college, which has developed so widely in the last decade, Lees has attempted to identify and meet the needs of its particular community. Until the early seventies this need was to provide two years' training of students preparing for traditional professions, especially education. However, with the surplus of educators in the early seventies this need no longer existed. An abrupt drop in the enrollment at Lees suggested the need for reassessing our priorities.

Prior to this time, the concept of adding two year career programs had been discussed from time to time, but in a somewhat fuzzy, rhetorical way. The drop in enrollment was the impetus needed to spur us into action and to renew our interest in career education.

It was recognized that resources beyond those available at Lees would be needed if significant changes were to be made. A proposal outlining some rather general plans was submitted to the U.S. Office of Education for funding. The proposal was funded on a tentative basis with the provision that a more comprehensive study of educational needs be performed and a more specific final plan be submitted.

From this introspection of the institution and careful study of the community, it was discovered that there were indeed several areas in which trained personnel were needed. One of the needs identified was for technologists in the surface mining industry. The current need for trained personnel, combined with the nation's energy needs and the huge deposits of coal in Kentucky, made this career area a very attractive one.

The Academic Council, a curriculum committee at Lees, reviewed the mining technologist need along with a list of other educational needs in the community and began the process of selecting those in which new curricula should be developed. In general, the most pressing needs identified were for two year career or career ladder programs. The new career areas were selected for development based upon their local need, national need, and the capability of Lees to offer a quality program. Where possible, Lees tried to build programs upon strengths in terms of facilities and staff already available at the institution.

Once the new career programs had been selected, it was also agreed that an underlying educational philosophy in all programs would be the development of the total individual. There was a very strong commitment to the principle that if the liberal arts courses are important in the more traditional programs in college, they are just as important in the development of a technologist or paraprofessional. As a result of this philosophy, the institutional graduation requirements remained the same for the new career programs as for all other programs.

The final plan for the curriculum was submitted to the U.S. Office of Education and an AIDP grant was awarded. This grant enabled Lees to employ a Director of Career Education to coordinate the planning and implementation of the proposed programs.

In general, the development of the Mining and Reclamation Technology Program as described below would also be typical of the development of the other career programs at Lees.

After looking at similar programs at other institutions, the Director of Career Education and the Academic Council developed a list of courses with rather sketchy descriptions as a tentative curriculum. It is interesting to note that the individuals involved in the planning to this point had little or no technical training in mining or reclamation. The tentative curriculum was prepared only as a working document to present to experts in the area.

The Director of Career Education visited educators at the University of Kentucky College of Engineering to solicit the ideas of professional educators who were training engineers in mining. Their comments were received and revisions were made in the proposed curriculum. This procedure was followed in a series of visits to groups of prospective employers. These included the Kentucky Bureau of Reclamation, the USDA Forestry Service (very active in reclamation research), the Engineering Department of the Kentucky Department of Highways, consulting engineering firms, and coal companies. With the advice received from these experts, the Director of Career Education completed another draft of the curriculum and devised evaluative measures to determine the success of the proposed program. The major evaluative measures were enrollment, graduate satisfaction, employer satisfaction, and observations from an outside evaluator.

The next step was to organize an Advisory Committee made up of individuals from many of the agencies that had been visited earlier. The President of Lees was instrumental in influencing prominent individuals such as presidents of coal companies, chief engineers, supervisors, and other key persons to serve on the Advisory Committee.

The Advisory Committee was then assembled and asked to make final curriculum recommendations and to help cost out the program. We listened carefully to each member, but at the same time we were careful not to be over-influenced because usually each member tended to over-stress his particular area. The assistance we have received from this committee has been invaluable. In recognition of this service we have made every effort to be organized in such a way as to maximize their effectiveness. They are all important people, involved in multimillion dollar operations and are not interested in just gathering for coffee. After the Advisory Committee had made their recommendations, the final plan for the program was then developed by the Director of Career Education and approved by the Academic Council, the President, and the Board of Trustees.

After obtaining approval for the program, there still remained the task of publicizing and securing of staff. To publicize the new program brochures were procured and given

to the Admission's Office for distribution, visits were made to area secondary schools, some radio spots were made, and news releases along with pictures of various members of the Advisory Committee were sent to area papers. It was felt that most students and mining companies in the area were aware of the program. A mining engineer was hired to serve as director of the program, instruct the courses in drafting and surveying, and supervise the acquisition of equipment. The other technical courses in the program are being taught by part-time instructors from the industry and by Lees' professors in mathematics, biology, and chemistry, who with help from the industry have been able to move from theory to more technical applications of their disciplines.

In support of the Mining and Reclamation Technology Program as well as the other career programs, a Career Counseling and Placement Center has been organized. The functions of this center include the testing, screening, and advising of applicants to the career programs; the securing and supervision of summer co-op positions for participants in the career programs; and the articulation of the different programs to prospective employers. We feel that a very important component in our career education is to assist in securing jobs for graduates of the career programs.

For proper maintenance of the program and the best utilization of the Advisory Committee, we plan to consult with individual members as the need arises on various problems and have at least one meeting of the committee each year to review the progress made in the program.

After a year in the program, one area that we see a need to improve is the screening of applicants in terms of aptitude and skills. We do not wish to exclude anyone from the program, but we feel a responsibility to advise students as to what extra efforts they might need to make to succeed. However, overall we are very optimistic. The industry remains enthusiastic about the program and continues to affirm the need for technologists. This is certainly both comforting and reassuring.

MINING AND RECLAMATION TECHNOLOGY

Lees Junior College
Jackson, Kentucky 41339

First Semester

Orientation to Mining Technology Implications of mining for the economy and the environment; overview of the curriculum.	1 hr.
English 101 – Communications I Basic English skills.	3 hrs.
Technical Mathematics Algebra and trigonometry; use of slide rule and calculator; math examples related to the industry.	5 hrs.
Physical Geology Study of rock formation, rock and mineral identification. Map reading and interpretation, formation of surface features.	4 hrs.
Leadership Skills Deals with leadership styles, goal setting, and public presentations	3 hrs.
TOTAL	16 hrs.

Second Semester

English 102 – Communications II Emphasis on writing technical reports.	3 hrs.
Technical Chemistry Soil, water, and analytical chemistry; a continuation of the Geology course.	4 hrs.
Engineering Graphics Graphics as related to the coal industry.	3 hrs.
Introduction to Surveying and Map Reading Introduction to use and care of surveying instruments; principles of surveying.	3 hrs.
Plant Science Study of basic plant physiology, plants suitable for growth on spoil banks, fertilizer needs, water requirements.	3 hrs.
TOTAL	16 hrs.

SUMMER

Co-op Placement Students will work on the job to gain familiarity with mining operations and the general atmosphere and attitude of the mining industry.	3 hrs.

Third Semester

Accounting Accounting/Bookkeeping for the small business.	3 hrs.
Surveying II Continuation of introductory course with emphasis upon practical problems such as design of haul roads and silt dams.	3 hrs.
Soil and Water Management Study of drainage, soil characteristics and soil mapping.	3 hrs.
Humanities 215 — Humanistic Expression A study of Humanities, Philosophy, Religion, and Music with emphasis on the interests of the class.	3 hrs.
Reclamation Techniques and Land Use Planning Review and evaluation of current reclamation techniques and current thinking on land use planning.	3 hrs.
TOTAL	15 hrs.

Fourth Semester

Fundamentals of Mining Engineering Overburden removal, drilling, blasting, and spoil placement. Field trips.	4 hrs.
Land Preparation and Reseeding Actual work in the field with hydro seeders and landscaping machinery.	4 hrs.
Business, Mining, and Reclamation Law Review of current legislation as it relates to the mining industry. Case studies.	3 hrs.
Introduction to Philosophy	3 hrs.
Religion Elective	3 hrs.
TOTAL	17 hrs.

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